

# **solid state communications**

**an international journal**

**volume 78**



**Pergamon Press**  
**Oxford · New York · Seoul · Tokyo**

# SOLID STATE COMMUNICATIONS

EDITOR-IN-CHIEF, ELIAS BURSTEIN

ASSOCIATE EDITOR-IN-CHIEF, MANUEL CARDONA

## EDITORIAL POLICY COMMITTEE

P. AIGRAIN, *Chairman*

P. G. DE GENNES

J. A. KRUMHANS

W. M. LOMER

S. LUNDQVIST

H. SUHL

Y. TOYOZAWA

## BOARD OF EDITORS

V. M. AGRANOVICH, *Moscow*

S. ALEXANDER, *Jerusalem*  
M. BALKANSKI, *Paris*

I. BALSLEV, *Odense*  
R. BARRIE, *Vancouver*

P. BURLET, *Grenoble*  
G. BURNS, *New York*  
(Deputy Editor-in-Chief)  
M. F. COLLINS, *Hamilton*  
P. H. DEDERICH, *Jülich*

A. L. EFROS, *Leningrad*  
G. FASOL, *Cambridge*

R. FIESCHI, *Parma*  
Z. GAN, *Beijing*  
C. E. T. GONÇALVES DA SILVA,  
*Campinas*  
M. GRYNBERG, *Warsaw*  
G. GÜNTHERODT, *Aachen*

J. JOFFRIN, *Paris*  
H. KAMIMURA, *Tokyo*

L. V. KELDYSH, *Moscow*

W. Y. KUAN, *Beijing*  
B. LUNDQVIST, *Göteborg*  
A. H. MACDONALD, *Bloomington*  
A. A. MARADUDIN, *Irvine*  
T. P. MARTIN, *Stuttgart*

E. MOLINARI, *Rome*  
B. MÜHLISCHLEGEL, *Köln*

A. OKIJI, *Osaka*  
A. PINZUK, *New Jersey*  
C. N. R. RAO, *Bangalore*  
R. H. SILSBE, *Ithaca*  
J. TAUC, *Providence*  
M. P. TOSI, *Trieste*  
T. TSUZUKI, *Sendai*  
D. VAN DYCK, *Antwerp*  
P. WACHTER, *Zürich*  
F. YNDURAIN, *Madrid*

A. ZAWADOWSKI, *Budapest*

Institute of Spectroscopy of the Academy of Sciences, U.S.S.R. Academgorodok, Podolski r-n, Moscow obl. 142092, U.S.S.R.  
Hebrew University, Jerusalem, Israel  
Laboratoire de Physique des Solides, Université Pierre et Marie Curie, 4, Place Jussieu, Tour 13-2e Etage, 75230 Paris Cedex 05, France  
Fysisk Institut, Odense Universitet, DK-5230 Odense M, Denmark  
Department of Physics, University of British Columbia, Vancouver 8, British Columbia, Canada V6T 1W5  
Centre d'Etudes Nucléaires, DRF/SPH—MDN, 85x, 38041 Grenoble Cedex, France  
I.B.M., T. J. Watson Research Center, P.O. Box 218, Yorktown Heights, New York 10598, U.S.A.

Department of Physics, McMaster University, Hamilton, Ontario, Canada L8S 4M1  
Institut für Festkörperforschung der Kernforschungsanlage Jülich GmbH, 5170 Jülich 1—Postfach 1913, Federal Republic of Germany  
(On leave)  
Hitachi Cambridge Laboratory, c/o Cavendish Laboratory, Madingley Road, Cambridge CB3 0HE, U.K.

Istituto di Fisica, Università degli Studi, 43100 Parma, Italy  
Department of Physics, Peking University, Beijing 100871, People's Republic of China  
Laboratoire Nacional de Luz Sincrotron/CNPq/MCT, Caixa Postal 6192, Campinas 13081 SP, Brazil

Institute of Experimental Physics, University of Warsaw, 00-681 Warsaw, ul. Hoza 69, Poland  
II. Physikalisches Institut, RWTH Aachen, Templergraben 55, D-5100 Aachen, Federal Republic of Germany  
Université Paris-Sud, Batiment 510, 91405 Orsay, France  
The Science University of Tokyo, Department of Applied Physics, Faculty of Science, 1-3 Kagurazaka, Shinjuku-ku, Tokyo 162, Japan  
P. N. Lebedev Institute, Academy of Sciences of the U.S.S.R. Leninskii Prospect 53, 117924 Moscow, U.S.S.R.

(On leave)  
Institute of Theoretical Physics, Chalmers University of Technology, S-412 96 Göteborg, Sweden  
Department of Physics, Indiana University, Bloomington, Indiana 47405, U.S.A.  
Department of Physics, University of California, Irvine, California 92717, U.S.A.  
Max-Planck-Institut für Festkörperforschung, Heisenbergstrasse 1, 7000 Stuttgart 80, Federal Republic of Germany

CNR Istituto "Corbino", Via Cassia 1216, 00189 Rome, Italy  
Institut für Theoretische Physik, Universität zu Köln, Zulpicher Str. 77, D-5000 Köln 41, Federal Republic of Germany  
Department of Applied Physics, Faculty of Engineering, Osaka University, Suita, Osaka 565, Japan  
Room 1D-433, AT&T Bell Laboratories, Murray Hill, New Jersey 07974, U.S.A.

Indian Institute of Science, Bangalore 560012, India  
Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, New York 14853, U.S.A.  
Box D, Division of Engineering, Brown University, Providence, Rhode Island 02912, U.S.A.  
International Centre for Theoretical Physics, P.O. Box 586, Miramare, 34100 Trieste, Italy  
Department of Physics, Faculty of Science, Tohoku University, Aoba-ku, Sendai 980, Japan  
University of Antwerp (RUCA), Groenenborgerlaan 171, B-2020 Antwerp, Belgium  
Laboratorium für Festkörperforschung der ETH, CH-8093 Zürich, Högberg, Switzerland  
Dpto. de Física de la Materia Condensada, C-III, Universidad Autónoma de Madrid, Cantoblanco, 28049-Madrid, Spain  
Institute of Theoretical Physics, Eötvös Loránd University, H-1088 Budapest, Puskin Utca 5-7, Hungary

## PRODUCTION EDITOR

M. R. JAKEMAN, Production Department, Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, U.K.

SOLID STATE COMMUNICATIONS is a companion journal to THE JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS.

**Publishing and Advertising Offices:** Pergamon Press Inc., 395 Saw Mill River Road, Elmsford, NY 10523, U.S.A.; Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, U.K. Tel., Oxford (0865) 794141. Fax., Oxford (0865) 60285.

Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., 395 Saw Mill River Road, Elmsford, NY 10523, U.S.A. and for the remainder of the world to: Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, U.K. Annual institutional subscription rate (1991) DM 2360.00 (including postage and insurance). Two-year institutional rate (1991/1992) DM 4484.00. Personal subscription rate for those whose library subscribes at the regular rate (1991) price on application. Prices are subject to change without notice. Subscription rates for Japan include despatch by air, and prices are available on application.

Published: 48 issues per annum.

**Back Issues:** Back issues of all previously published volumes, in both hard copy and on microform, are available direct from Pergamon Press offices.

Copyright © 1991 Pergamon Press plc

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means: electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise without permission in writing from the copyright holder.

## U.S. Copyright Law Applicable to Users in the U.S.A.

**Photocopying information for users in the U.S.A.** The Item-Fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance of \$3.00 per copy per article is paid directly to the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970.

The Item-Fee Code for this publication is: 0038-1098/91 \$3.00 + .00

**Disclaimer.** Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

**Permission for other use.** The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

© TM The text paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

# CONTENTS

APRIL

VOLUME 78, NUMBER 1

1991

## General Papers

- |   |   |
|---|---|
| R. P. Vardapetyan, A. P. Hovhanesyan and A. A. Araratyan  | 1 Theory of self-transducer photoacoustic spectroscopy  |
| R. W. van der Heijden, G. Chen, A. T. A. M. de Waele, H. M. Gijsman and F. P. B. Tielen                         | 5 Simple activated transport in ion-implanted Si:As at temperatures below 0.5 K   |
| E. López Olazagasti, G. H. Coccoletzi and W. Luis Mochán  | 9 Optical properties of bimetallic superlattices  |
| J. Martorell, S. Klarsfeld, D. W. L. Sprung and Hua Wu  | 13 Analytical treatment of electron wave propagation in two-dimensional structures  |
| I. P. Ipatova, V. A. Shchukin, V. G. Malyshkin, A. Yu. Maslov and E. Anastassakis                               | 19 Formation of strained superlattices with a macroscopic period via spinodal decomposition of III-V semiconductor alloys |
| W. Kang   | 25 On the splitting of Shubnikov-de Haas oscillations in organic conductors   |
| A. P. Monkman and P. Adams  | 29 Stretch aligned polyaniline films  |
| J. M. Pérez-Mato, G. Madariaga and L. Elcoro  | 33 Influence of phason dynamics on atomic Debye-Waller factors of incommensurate modulated structures and quasicrystals   |
| S. A. Patil, S. M. Otari, V. C. Mahajan, M. G. Patil, A. B. Patil, M. K. Soudagar, B. L. Patil and S. R. Sawant | 39 Structural, IR and magnetisation studies on $\text{La}^{3+}$ substituted copper ferrite                                |

## Superconductors and Superconductivity

- |   |  |
|---|--|
| Y. Suwa and M. Tsukada  | 45 Superconductivity of thin wire networks with very small meshes  |
| H. Mori, S. Tanaka, T. Mori, Y. Maruyama, H. Inokuchi and G. Saito                        | 49 Structural and physical properties of $(\text{BEDT-TTF})_x\text{Li}_{0.5}\text{Hg}(\text{SCN})_x(\text{H}_2\text{O})_2$ and $\alpha''\text{-(BEDT-TTF)}_x\text{CsHg}(\text{SCN})_x$ |
| E. J. Nicol and J. P. Carbotte  | 55 D. C. Josephson current in marginal Fermi liquid model  |
| M. S. R. Rao, R. Suryanarayanan, L. Ouhammou and O. Gorochoy                              | 59 Structural and superconducting properties of $\text{YSrBaCu}_{3-x}\text{Al}_x\text{O}_{6.2}$ ( $0 < x < 0.2$ )  |
| R. Gajić, J. Schützmann, J. Betz, T. Zetterer, H. H. Otto, P. E. Obermayer and K. F. Renk | 65 Pronounced phonon softening in the far-infrared spectra of $\text{YBa}_2(\text{Cu}_{1-x}\text{Zn}_x)_3\text{O}_7$   |
| E. Spahn and K. Keck  | 69 Anomalous resistance behaviour in the superconducting fluctuation region of thin aluminum films   |
|   | i Instructions for Authors on the Preparation of Camera-Ready Manuscripts for <i>Solid State Communications</i>  |

**General Papers**

- K. Suzuki, T. Enoki and K. Imaeda 73 Synthesis, characterization and physical properties of incommensurate layered compounds  $(\text{RE})_x\text{TaS}_2$  (RE = rare earth metal)
- V. P. Godbole, S. N. Yedave, S. J. Dikshit, S. M. Chaudhari, S. M. Kanetkar and S. B. Ogale 79 Evidence for significant modifications of ion induced processes in oxide by external electric field
- A. M. Sureshini and K. Hariharan 85 Transport and thermal properties of the solid electrolyte  $\text{Ag}_x\text{Cu}_{2-x}\text{HgI}_4$

**Superconductors and Superconductivity**

- G. A. R. Lima, A. Fazzio and R. Mota 91 Theoretical investigation of the optical spectra of superconducting  $\text{YBa}_2\text{Cu}_3\text{O}_7$
- A. S. Kazeroonian, T. K. Cheng, S. D. Brorson, Q. Li, E. P. Ippen, X. D. Wu, T. Venkatesan, S. Etemad, M. S. Dresselhaus and G. Dresselhaus 95 Probing the Fermi level of  $\text{Y}_{1-x}\text{Pr}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-d}$  by femtosecond spectroscopy
- Z. V. Popovic, A. Sacuto and M. Balkanski 99 Raman spectra of  $\text{Nd}_{1.85}\text{Ce}_{0.15}\text{CuO}_4$
- T. Onogi, R. Sugano and Y. Murayama 103 Power-law resistive behavior of two-dimensional Josephson junction array with bond defects: dynamic simulation and its relevance to high- $T_c$  oxides
- J. Bonča, P. Prelovšek and I. Sega 109 Ground state properties in the  $t-J$  model at high doping
- R. Kuentzler, G. Pourroy, A. Tigheza and Y. Dossmann 113 Effect of preparation method and impurities on the specific heat and magnetic susceptibility of  $\text{Nd}_2\text{CuO}_4$

**General Papers (contd)**

- G. M. Niftiyev, F. B. Askerov and O. B. Tagiyev 119 Electrical properties of  $\text{SmGa}_4\text{S}_4$  single crystal
- Tsai-Sheng Gau and Jiang-Tsu Yu 123 Electron paramagnetic resonance of  $\text{Cu}^{2+}$  in  $\text{KHCO}_3$  crystals
- K. Nakagawa, B. Rakvin and N. S. Dalal 129 Temperature dependence of large hyperfine coupling:  $\text{SeO}_3^{\cdot-}$  radical and evidence against a 310 K phase transition in  $\text{KH}_2\text{PO}_4$
- G. Gangadhar Reddy and A. Ramakanth 133 Thermal expansion of mixed valence compounds
- Wang Jiajian, Song Yumei, Cheng Xingkui and Dai Guocai 137 Study of persistent photoconductivity and Staebler - Wronski effects on  $a\text{-Si:H}/a\text{-SiY:H}$  semiconductor superlattice
- I. Pelant and J. Hála 141 Note on coexistence of free and self-trapped excitons in  $\text{AgCl}$
- N. H. Lu, P. M. Hui and T. M. Hsu 145 Wannier exciton binding energies in  $\text{GaAs}/\text{Al}_x\text{Ga}_{1-x}\text{As}$  quantum wells
- A. Nayak, D. R. Rao and H. D. Banerjee 149 Derivative spectra of polycrystalline  $\text{Zn}_3\text{P}_2$  thin films
- J. Kudrnovský and N. E. Christensen 153 Electronic structure and properties of transition-metal disilicides  $\text{CoSi}_2$ ,  $\text{NiSi}_2$  and their alloys  $\text{Co}_x\text{Ni}_{1-x}\text{Si}_2$
- C. Ghezzi, R. Mosca, A. Bosacchi, S. Franchi, E. Gombia and L. E. Vanzetti 159 Evidence for non-equilibrium free electron density in  $\text{AlGaAs}$  at low temperatures

- G. E. W. Bauer 163 Exciton unbinding in a confined Fermi sea
- A. Lorek, N. Grewe and F. B. Anders 167 Magnetotransport in heavy fermion compounds
- Z. Kučera, P. Hlídek, P. Höschl, V. Koubele and M. Zvára 173 The absorption edge in p-type  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$  ( $x \approx 0.2$ )

## APRIL

## VOLUME 78, NUMBER 3

1991

## General Papers

- A. Chmel, E. K. Mazurina et V. S. Shashkin 177 Déplacement du pic Boson dans le spectre Raman de la silice préparée à partir de gels
- R. Chevalier and J. Dumas 181 Mössbauer study of the Peierls transition in the quasi-two dimensional molybdenum oxide  $\gamma\text{-Mo}_8\text{O}_{11}$
- B. V. B. Sarkissian and B. D. Rainford 185 Neutron spin echo studies in  $\text{Pd-Mn}$  alloys
- A. Buckthought, R. Boulet, A. Sachrajda, Z. Wasilewski, P. Zawadzki and F. Guillon 191 Activation measurements of the fractional quantum Hall effect in a tilted magnetic field as a function of electron density
- C. Jeandey, J. L. Oddou, J. L. Mattei and G. Fillion 195 Mössbauer investigation of the pyrrhotite at low temperature
- R. Giannetta and L. Wilen 199 Nonequilibrium melting of the two dimensional electron crystal
- A. O. Gogolin and A. S. Ioselevich 205 Anomalous hopping magnetoresistance in semiconductors with complex magnetic structure: application to lightly doped  $\text{La}_2\text{CuO}_4$
- V. Riede, H. Neumann, V. Krämer and M. Kittel 211 Infrared and Raman spectra of  $\text{CdIn}_2\text{Te}_4$
- L. Jaeger 215 Resonant transmission through a double-point contact device in high magnetic field
- C. J. Chou and G. F. Neumark 219 Acoustic phonon-broadened line shape of donor-acceptor pair spectra — A first-principles study

## Superconductors and Superconductivity

- V. N. Kostur and S. E. Shafranjuk 227 The metal-oxide superconducting state symmetry and  $I-V$  characteristics of the tunnel junctions
- S. Yoksan 233 Isotope effect in high- $T_c$  superconductors
- M. Guillot, B. Souletie, J. L. Tholence, H. Noël, J. C. Levet, M. Potel and P. Gougeon 237 Magnetic properties and critical current densities of large crystals of  $\text{YBa}_2\text{Cu}_3\text{O}_7$
- M. V. Krasin'kova and B. Ya. Moizhes 241 On anomalously high  $T_c$  in some cuprates and nickelates
- E. Yap and G. Bergmann 245 Transition temperature of coupled thin superconducting films

## APRIL

## VOLUME 78, NUMBER 4

1991

## General Papers

- R. Osório, S. Froyen and A. Zunger 249 Superlattice energetics and alloy thermodynamics of  $\text{GaAs/Ge}$

- P. B. Fabritchnyi, L. P. Fefilatiev, 257 Etude par spectrometrie Mössbauer des etapes initiales du  
G. Demazeau, J. Etourneau, V. V. Avdeev, processus d'enrobage des particules aciculaires de  $\text{Fe}_2\text{O}_3$ , par  
E. F. Levina, V. V. Popov et coprecipitation des ions  $\text{Co}^{2+}$  et  $\text{Fe}^{2+}$   
M. A. Kremenchugskaya
- Y. Liu, R. S. Zheng, S. Takaoka, K. Murase, 261 Fluctuations, localization effect and AB effect in mesoscopic  
K. Gamo and S. Namba structures of bismuth
- A. Filipponi, A. Di Cicco, T. A. Tyson and 265 "Ab-initio" modelling of X-ray absorption spectra  
C. R. Natoli
- M. Abkowitz and M. Stolka 269 Electronic transport in aliphatic polysilylenes and poly-  
germylenes
- K. J. Chang 273 Atomic structure of shallow acceptor- and donor-hydrogen  
complexes in GaAs
- T. Takagahara 279 Dependence on dimensionality of excitonic optical  
nonlinearity in quantum confined structures

**Superconductors and Superconductivity**

- S. B. Ogale, S. T. Bendre, P. Guptaarma 285 Influence of magnetic impurities on current transport in  
and M. S. Multani epitaxial thin films of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$
- B. Friedl, C. Thomsen, H.-U. Habermeyer 291 Intensity anomalies of Raman-active phonons in the  
and M. Cardona superconducting state of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$
- Shiyang Tian, Jingqing Liu, Meihua Li and 295 Further evidence for strong electron-phonon interaction  
Zhong-Xian Zhao origin of low frequency structure of infrared reflectance in  
high- $T_c$  superconductors
- A. Furusaki and M. Tsukada 299 DC Josephson effect and Andreev reflection
- R. P. Vasquez, A. Gupta and A. Kussmaul 303 X-ray photoelectron spectroscopy study of chemically-etched  
Nd-Ce-Cu-O surfaces
- Shi Da-ning, Shi Wei and Li Zheng-zhong 307 Hole pairing in the RVB state

**General Papers (contd)**

- Ying-chang Yang, Xiao-dong Zhang, Lin-shu 313 Neutron diffraction study of the nitride  $\text{YTiFe}_{11}\text{N}_x$   
Kong, Qi Pan, Sen-lin Ge, Ji-lian Yang,  
Yong-fan Ding, Bai-sheng Zhang,  
Chun-tang Ye and Lan Jin
- Ying-chang Yang, Xiao-dong Zhang, 317 New potential hard magnetic material —  $\text{NdTiFe}_{11}\text{N}_x$   
Lin-shu Kong, Qi Pan and Sen-lin Ge
- A. Stesmans 321 Shallow donor in buried oxide Si-on-insulator structures  
revealed by  $\gamma$ -irradiation-induced electron spin resonance  
activation

i Author Index Nos 1-4

MAY

VOLUME 78, NUMBER 5

1991

**General Papers**

- B. Samson, S. R. P. Smith, C. T. Foxon, 325 Interface effects on phonons in superlattices  
D. Hilton and K. J. Moore
- I. T. Belash, O. I. Barkalov, A. I. Kolesnikov, 331 Inelastic neutron scattering in amorphous and crystalline  
E. G. Ponyatovskii and M. Prager phases of Zn-Sb and Cd-Sb systems produced by  
thermobaric treatments



K. Harigaya and A. Terai	335 Metal-insulator transition in doped conducting polymers: disappearance of electronic gap with persisting bond alternation
S. G. Tikhodeev	339 Tamm minibands in superlattices
J. F. Young, P. J. Kelly, N. L. Henry and M. W. C. Dharma-wardana	343 Carrier density dependence of hot-electron scattering rates in quasi-equilibrium electron-hole plasmas
E. Anastassakis	347 In-plane misfit strains in heterostructures and superlattices: arbitrary direction of growth
J. Mašek	351 Electronic structure and exchange interactions in diluted semimagnetic semiconductors (Zn,Co)Se and (Zn,Mn)Se
H. Dreyssé, L. T. Wille and D. de Fontaine	355 Microscopic theory of surface segregation in binary alloys
P. Bordet, D. E. Cox, G. P. Espinosa, J. L. Hodeau and M. Marezio	359 Synchrotron X-ray powder diffraction study of the phase I' compound: $\text{SnLaRh}_3\text{Sn}_{12}$

**Superconductors and Superconductivity**

V. G. Orlov	369 The crystalline electric field and Nd antiferromagnetism in $\text{Nd}_2\text{CuO}_4$
P. I. Arseyev and B. A. Volkov	373 Resonance impurities in superconductors
R. C. Casella	377 A theoretical model for the tunneling-gap anisotropy observed in layered copper-oxide high-temperature superconductors
A. L. U. Roberts, S. C. Mayo, N. C. Woolsey, A. M. Glazer and K. P. J. O'Reilly	381 Application of synchrotron anomalous scattering to study the modulated structure of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_x$
M. DeMarco, Min Qi, J. H. Wang, M. Chaparala and M. J. Naughton	385 Oxygen removal by hydrogen gas in $^{57}\text{Fe}$ doped $\text{YBa}_2\text{Cu}_3\text{O}_x$
Tu Heng-Yong and Wu Jin-Di	391 A new superconductor in the system $\text{Pb}-\text{Sr}-\text{Ba}-\text{La}-\text{Cu}-\text{O}$
R. Akis and J. P. Carbotte	393 Damping effects on NMR in superconductors
S. C. Bhargava, J. S. Chakrabarty, R. Sharma, C. V. Tomy and S. K. Malik	397 Preparation of 2212 phase of Bi superconductor with $T_c$ of 92 K
K. N. Shrivastava	403 Formation of the flux-quantized oscillations from the $\text{Cu}^{2+}$ electron-paramagnetic-resonance states in the microwave absorption in high-temperature superconductors
A. M. Balagurov, J. Piechota and A. Pajaczkowska	407 Neutron powder diffraction on $\text{YBa}_2(\text{Cu}_{1-x}\text{Ni}_x)\text{O}_{7-x}$
D. A. Ladds, G. A. Saunders, P. J. Ford, D. P. Almond, Chang Fanggao, Z. Othaman, S. J. Bending, S. Smith, B. F. Chapman, R. A. L. Sullivan, Ll. Mañosa and Q. A. Pankhurst	413 Magnetic origins of the phase transitional behaviour at 200 K in $\text{Ca}_{1-x}\text{Zn}_x\text{Fe}_2\text{O}_4$
J. P. Sanchez, K. Tomala and A. Szytula	419 $^{155}\text{Gd}$ Mössbauer study of $\text{GdMn}_2\text{Ge}_2$

**General Papers (contd)**

P. Heszler, L. B. Kiss and M. Török	425 Model for the UV laser ablation of polymers in the low-fluence limit
S. Modak and S. Gangopadhyay	429 Surface segregation of Pt-Ni alloys

- J. Cen, K. Kempa and P. Bakshi 433 Amplification of plasma modes in semiconductor heterostructures
- Ji-Zhong Xu 439 Radiation of a kink in hydrogen-bonded chains
- U. König, B. Ginatempo, J. Redinger and P. Weinberger 445 A fully relativistic study of angle-resolved photoemission of the Au (1 1 1) surface
- R. D. S. Yadava and A. V. R. Warriar 449 On the nature of alloying in HgTe-CdTe solid solutions at low temperatures from electrode potential measurements
- H. J. W. Zandvliet, W. J. Caspers and A. van Silfhout 455 Order-disorder phase transition of the Ge(0 0 1) surface
- M. Krapf, G. Denninger, H. Pascher, G. Weimann and W. Schlapp 459 Optically detected nuclear magnetic resonance and Knight shift in  $\text{Al}_{1-x}\text{Ga}_x\text{As}/\text{GaAs}$  heterostructures
- R. S. Crisp, D. Haneman and J. W. Chu 465 Valence band structure of  $\text{CuInSe}_2$  by soft X-ray spectroscopy
- B. Müller and H. D. Lutz 469 Raman spectra of  $\text{MnSe}_2$ ,  $\text{MnTe}_2$ ,  $\text{RuTe}_2$ , and  $\text{OsTe}_2$
- O. Moze, R. M. Ibberson and K. H. J. Buschow 473 Neutron diffraction investigation of Si site preference in  $\text{RENi}_m\text{Si}_2$  compounds

MAY

VOLUME 78, NUMBER 6

1991

**General Papers**

- Z. Shuai, D. Beljonne and J. L. Brédas 477 SSH-Hamiltonian description of the electronic structure and vibrational properties of polyparaphenylene vinylene
- A. Salinas-Sánchez, R. Sáez-Puche, J. Rodríguez-Carvajal and J. L. Martínez 481 Structural characterization of  $\text{R}_2\text{BaNiO}_3$  ( $\text{R} = \text{Tm}$  and  $\text{Yb}$ ): polymorphism for  $\text{R} = \text{Tm}$
- R. Tanaka, S. Nakamichi, S. Endo, H. Wada, M. Shiga and F. Ono 489 Pressure induced ferromagnetism in  $\text{TbMn}_2$
- R. L. Williams, P. Coleridge, Z. R. Wasilewski, M. Dion, A. Sachrajda and S. Rolfe 493 Silicon atomic plane doping in MBE grown  $\text{InAs}/\text{GaAs}$
- M. S. Somayazulu, P. U. M. Sastry and V. K. Wadhawan 499 Anomalous changes in lattice parameters, specific heat, and loss factor in potassium titanyl phosphate at 324 K
- E. R. Giessinger, R. Braunstein, E. Ladizinsky, L. Haupt, J. W. Schünemann, K. Bärner, U. Sondermann and A. F. Andresen 503 Raman spectra of ferromagnetic  $\text{La}_{0.8}\text{Sr}_{0.2}\text{Cu}_x\text{Mn}_{1-x}\text{O}_3$  mixed crystals

**Superconductors and Superconductivity**

- Y. Koike, N. Watanabe, T. Noji and Y. Saito 511 Effects of the Cu-site substitution on the anomalous  $x$  dependence of  $T_c$  in  $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$
- V. V. Gridin, T. W. Krause, P. K. Ummat and W. R. Datars 515 Magnetic field dependent width of the resistive transition in superconducting  $\text{Bi}_{1-x}\text{Pb}_{0.4}\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_y$

**General papers (contd)**

- A. S. Nasibov, P. V. Shapkin, J. V. Korostelin, J. A. Vlasov, L. S. Markov, A. I. Maslov and D. L. Fedorov 521 Spectroscopic investigations of semiconductor solid solutions with structural phase transition ( $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$  system)



J. S. Nkoma	525 Surface modes of coupled sphere systems
V. I. Timoschuk and E. A. Rozenberg	531 Magnetic phase transitions of $\zeta$ -Mn <sub>2</sub> Ge <sub>2</sub> in magnetic fields up to 25 T
J. Lukose and B. Pradeep	535 Electrical and optical properties of bismuth sulphide (Bi <sub>2</sub> S <sub>3</sub> ) thin films prepared by reactive evaporation
H. H. Joshi, R. B. Jotania, R. G. Kulkarni and R. V. Upadhyay	539 <sup>57</sup> Fe Mössbauer and magnetic studies on the spinel system Co <sub>1-x</sub> Ge <sub>2-2x</sub> O <sub>4</sub>
C. D. Kourkoutas, J. Novac, M. Kuliffayova, G. J. Papaioannou, P. Kordos and V. Ioannou-Sougleridis	543 Transport properties of praseodymium doped <i>p</i> -type In <sub>0.5</sub> Ga <sub>0.47</sub> As layers
M. Ichikawa, T. Gustafsson and I. Olovsson	547 Low-temperature phase transition in Cs <sub>3</sub> D(SeO <sub>3</sub> ) <sub>2</sub>
R. Kawashima	553 Dependence of a.c. conductivity on temperature and frequency in an europium nitrate crystal
S. Kondo, T. Itoh, T. Saito and M. Mekata	557 Well defined amorphous to crystal transformation of cold condensed TiCl <sub>3</sub> films
S. Rahman and T. W. Mihalisin	561 Evolution from a weak to a concentrated Kondo behavior in Ce(Tl <sub>1-x</sub> In <sub>x</sub> ) <sub>3</sub> system
T. J. Bastow, S. L. Segel and K. R. Jeffrey	565 Antiferroelectric transition in KOH(D): a <sup>2</sup> H and <sup>39</sup> K NMR study
M. P. Park, M. Nitta and T. Itoh	569 Electrical characteristics of amorphous GaAs <sub>1-x</sub> P <sub>x</sub> films formed by ion beam sputter deposition

A cumulative Author Index appears in Numbers 4, 8 and 12 of each Volume

MAY

VOLUME 78, NUMBER 7

1991

**General Papers**

T. Bouhacina, G. Ablart, J. Pescia and Y. Servant	573 Spin-lattice relaxation in glasses doped with Fe <sub>2</sub> O <sub>3</sub>
M. L. Bansal, A. K. Sood and M. Cardona	579 Strongly dispersive low frequency Raman modes in germanium
Z. W. Lu, S.-H. Wei, A. Zunger and L. G. Ferreira	583 Ground state structures of intermetallic compounds: a first-principles Ising model
G. M. Roesler, Jr and P. M. Tedrow	589 Magnetotransport behavior of heavy fermion thin films
P. U. M. Sastry	593 Bond susceptibilities and linear electro-optic properties of KTiOPO <sub>4</sub>
A. R. Law, H. P. Hughes, P. T. Andrews and F. A. Lévy	599 On the unoccupied electronic states of Hf <sub>x</sub> Ti <sub>1-x</sub> Se <sub>2</sub> alloys

**Superconductors and Superconductivity**

Li Youmo, Li Yanrong and Hong Guangyan	605 Superconductivity in Bi <sub>1.5</sub> Pb <sub>0.4</sub> Sb <sub>7</sub> Sr <sub>2</sub> Ca <sub>2</sub> Cu <sub>2</sub> O <sub>x</sub> system ( $x = 0-0.32$ )
--	---

- Qing-rong Feng, Han Zhang, Sun-qi Feng,  
Xing Zhu, Ke Wu, Zun-xiao Liu and  
Li-xin Xue
- A. Chakravarti, R. Ranganathan,  
C. D. Mukherjee and N. Chatterjee
- B. Loegel, D. Bolmont, H. Dalderop and  
A. Mehdaoui
- K. Osuch
- O. Llopis, T. Parra, J. C. Ousset,  
D. B. Chrisey, J. S. Horwitz and  
J. Graffeuil
- T. Freltoft, H. J. Jensen and P. Minnhagen
- 609 The process of forming 2223 phase from 2212 phase in Bi(Pb)-Sr-Ca-Cu-O system
- 615 AC susceptibility of high temperature superconductor in BCS model
- 621 Homogeneity of high and low temperature superconducting compounds in relation with magnetic characterization
- 627 Symmetry changes at the Néel point in the high-temperature superconductor  $\text{GdBa}_2\text{Cu}_3\text{O}_{7-\delta}$
- 631 Comparative study of microwave surface impedance of high  $T_c$  superconductor samples
- 635 Evidence for intrinsic critical current density in high  $T_c$  superconductors

#### General Papers (contd)

- M. Sancrotti, L. Duo', R. Cosso, S. D'Addato,  
S. Iacobucci, G. Panaccione, A. Ruocco,  
S. Nannarone, M. Surman, P. Unsworth and  
P. Weightman
- R. Staske, P. Fröbel, M. v. Dirke, S. Müller  
and K. Bärner
- A. Kumar, S. Kumar and R. Arora
- G. Pastori Parravicini, L. Resca, R. D. Graft  
and D. J. Lohrmann
- C. Testelin, C. Rigaux, A. Mycielski,  
M. Menant and M. Guillot
- R. I. Devlen, G. S. Kanner, Z. Vardeny and  
J. Tauc
- M. Albrecht, U. Gradmann, Th. Reinert and  
L. Fritsche
- 641 Unoccupied 3d-derived states in Ni silicides via Ni  $L_{2,3}$  X-ray absorption spectroscopy
- 647 The fluorescence of  $\text{Eu}^{+3}$  in lithium tungstate borate glasses
- 651 Space charge limited conduction in  $\text{Ge}_3\text{Se}_{100}$
- 655 Intervalley interference and lattice relaxation in DX centers
- 659 Exchange interactions in  $\text{CdFeTe}$  semimagnetic semiconductors
- 665 Picosecond photomodulation spectra of  $\alpha\text{-Si:H}$  in the small signal limit
- 671 Scattering phases in low energy electron diffraction from spot profile analysis and from multiple scattering theory

MAY

VOLUME 78, NUMBER 8

1991

#### General Papers

- S. Nomura and T. Kobayashi
- M. Anagnostou, C. Christides and D. Niarchos
- S. A. Cannas, F. A. Tamarit and C. Tsallis
- N. S. Murthy, R. H. Baughman,  
L. W. Shacklette, H. Fark and J. Fink
- 677 Nonparabolicity of the conduction band in  $\text{CdSe}$  and  $\text{Cd}_3\text{Se}_{1-x}$  semiconductor microcrystallites
- 681 Nitrogenation of the  $\text{RFe}_3\text{Mo}_2$  ( $R$  = rare earth) compounds with  $\text{ThMn}_{12}$  type structure
- 685 A generalised Hubbard Hamiltonian: influence of temperature and fractality
- 691 A hexagonal structure for alkali-metal doped poly(p-phenylene)

- T. Shimizu, K. Nomura, T. Sambongi,  
H. Anzai, N. Kinoshita and M. Tokumoto 697 Temperature dependence of the threshold electric-field for depinning of the spin-density wave in quenched  $(\text{TMTSF})_2\text{ClO}_4$
- P. Ziesche and R. Kaschner 703 Generalized surface virial theorem and other sum rules for the jellium model of half-space and quarter-space solids. Surface stress theorem and surface-edge theorem

**Superconductors and Superconductivity**

- V. V. Moshchalkov 709 Workshop on Fermiology of High- $T_c$  Superconductors
- B. Souletie, M. Guillot, P. Lejay and J. L. Tholence 711 Multiple- $\Phi_0$  concentric vortex state in superconductors
- P. Pureur and J. Schaf 717 Effect of the annealing temperature and Ag addition on the grain size of  $\text{YBa}_2\text{Cu}_3\text{O}_{6.9}$
- C. Thomsen, B. Friedl, M. Cieplak and M. Cardona 723 Magnetic irreversibility line in a deoxygenated  $\text{YBaCuO}$  superconductor
- K. N. Shrivastava and S. Koka 727 Effect of substitutional impurities on the superconducting gap of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$
- A. A. Aligia 735 Microwave signals from the flux-quantized states in high-temperature superconductors
- 739 Electronic structure of  $\text{YBa}_2\text{Cu}_3\text{O}_{6.1}$ : a strong-coupling calculation

**General papers (contd)**

- V. M. Agranovich 747 Dielectric permeability and influence of external fields on optical properties of superlattices
- K. B. N. Sarma, B. Madhusudhana, B. J. Reddy, S. Vedanand and G. Srinivasulu 751 Optical and ESR studies of  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$  and  $\text{Mn}^{2+}$  ions in humite
- K. Tanaka and K. Shimakawa 755 Pressure effects in organopolysilane
- F. A. Oliveira 759 Magnetic modes in superlattices
- A. Kozanecki, M. Chan, C. Jeynes, B. Sealy and K. Homewood 763 Lattice location of erbium implanted into GaAs
- D. Rodic, P.-J. Ahlén, Y. Andersson, R. Tellgren and F. Bouree-Vigneron 767 The crystal and magnetic structure of tetragonal  $\text{Pd}_2\text{Mn}$
- G. P. M. Poppe, C. M. J. Wijers and A. van Silfhout 773 The double cell technique: a discrete dipole approach towards surface optics
- P. Manoravi and K. Shahi 779 Comments on  $\text{CB}\Omega$  model: prediction of composition corresponding to maximum conductivity in mixed crystals

i Author Index Nos 1-8

**General Papers**

Q. Qin and H. Keiter

783 Spin correlations around a magnetic impurity

A. L. Ivanov and G. S. Vygovskii	787	Three-wave polariton solitons of new type in polar semiconductors
R. Rodrigues, P. S. S. Guimarães, J. F. Sampaio, R. A. Nogueira, A. T. Oliveira Jr, I. F. L. Dias, J. C. Bezerra, A. G. de Oliveira, A. S. Chaves and L. M. R. Scolfaro	793	Broadening of the Si doping layer in planar-doped GaAs in the limit of high concentrations
M. Kasaya, K. Katoh and K. Takegahara	797	Semiconducting properties of the isomorphous compounds, $\text{Ce}_3\text{Au}_3\text{Sb}_4$ and $\text{Ce}_3\text{Pt}_3\text{Sb}_4$
O. Eriksson, G. W. Fernando, R. C. Albers and A. M. Boring	801	Enhanced orbital contribution to surface magnetism in Fe, Co, and Ni
<hr/>		
<b>Superconductors and Superconductivity</b>		
A. Plecenik, Š. Beňacka, M. Darula, Š. Chromik, P. Mikušik and M. Grajcar	809	The energy gap depression in $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ /metal contacts
<hr/>		
<b>General papers (contd)</b>		
M. I. Dyakonov	817	Possible mechanism for the breakdown of the quantum Hall effect
V. A. Vyun, Yu. O. Kanter, S. M. Kikkarin, V. V. Pnev, A. A. Fedorov and I. B. Yakovkin	823	Acoustoelectric interaction of surface acoustic wave in GaAs-InGaAs superlattice
A. E. Szukiel and K. Durczewski	827	Finite lifetime of magnetic excitations and electrical resistivity in $\text{Pr}_2\text{Ti}$ and $\text{PrB}_4$
R. M. Wentzcovitch and J. L. Martins	831	First principles molecular dynamics of Li: test of a new algorithm
N. Mestres, L. Viña, A. Manescau, E. Calleja, B. Koiller, P. Daste and P. Riglet	835	Resonance Raman scattering of $\text{In}_x\text{Al}_{1-x}\text{As}$ lattice matched to InP
S. R. Parkin, P. R. Watson, R. A. McFarlane and K. A. R. Mitchell	841	A revised LEED determination of the relaxations present at the (3 1 1) surface of copper
V. N. Strocov	845	Low energy electron reflection: possibility for $E(k)$ points mapping above the vacuum level
C. D. Kourkoutas, P. C. Euthymiou, B. Szentpali, B. Kovacs and K. Somogyi	849	Correction of the drift mobility measurements in GaAs MESFETS

**General Papers**

Al. L. Efros, A. I. Ekimov, F. Kozlowski, V. Petrova-Koch, H. Schmidbaur and S. Shumilov	853	Resonance Raman spectroscopy of electron-hole pairs — polar phonon coupling in semiconductor quantum microcrystals
P. J. H. Denteneer and J. M. Soler	857	Energetics of point and planar defects in aluminium from first-principles calculations
P. B. Fabritchnyi, L. P. Fefilatiev, G. Demazeau, J. Etourneau, V. V. Avdeev and M. A. Kolotyorkina	863	Influence de l'état d'oxydation des atomes de fer sur la répartition du cobalt et du fer coprécipites lors du processus d'enrobage des particules de $\text{Fe}_2\text{O}_3$

Y. Hwu, L. Lozzi, S. La Rosa, M. Marsi,  
M. Onellion, H. Berger, F. Gozzo, F. Lévy  
and G. Margaritondo

869 BiCaSrCuO – semiconductor interface formation processes

### Superconductors and Superconductivity

K. Holczer, O. Klein and G. Grüner

875 Observation of the conductivity coherence peak in superconducting Pb

V. V. Moshchalkov, N. A. Samarin,  
I. O. Grishchenko, B. V. Mill and  
J. Zoubkova

879 Magnetic interactions in  $R_2\text{BaCuO}_3$  ( $R = \text{Y, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, Lu}$ ) compounds

Hitoshi Sumi and Atsuko Sumi

883 Polaron states and weak self-trapping in two dimensions

G. Leyva, C. Acha, P. Levy, G. Polla and  
M. A. R. de Benyacar

887 Synthesis and superconducting properties of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$  obtained from binary oxides

M. P. Petrov, I. V. Pleshakov, A. P. Paugurt,  
M. V. Krasinkova, A. A. Nechitaylov and  
B. T. Melekh

893 Radio-frequency echo in high- $T_c$  superconductors  $\text{Bi}_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_x$  and  $\text{YBa}_2\text{Cu}_3\text{O}_x$

S. Suhran, C. E. Johnson, Q. A. Pankhurst  
and M. F. Thomas

897 Coexistence of a magnetic system and superconductivity in  $\text{YBa}_2(\text{Cu}_{0.99}\text{Fe}_{0.01})\text{O}_{6.5+\delta}$

### General Papers (contd)

E. Puppini, M. Scagliotti and C. Chemelli

905 UV inverse photoemission from FePS<sub>2</sub>

A. V. Skripov, M. Yu. Belyaev and  
A. P. Stepanov

909 NMR study of hydrogen mobility in C14- and C15-type compounds  $\text{ZrCr}_2\text{H}_x$

T. Ohtani, J. Ogura, M. Sakai and Y. Sano

913 Phase transitions in new quasi-one-dimensional sulfides  $\text{TiCu}_2\text{S}_4$  and  $\text{KCu}_2\text{S}_4$

K. Yakushi, H. Yamakado, T. Ida and  
A. Ugawa

919  $d-\pi$  interaction in conducting phthalocyaninatocobalt hexafluoroarsenate,  $\text{CoPc}(\text{AsF}_6)_{0.5}$

JUNE

VOLUME 78, NUMBER 11

1991

### General Papers

V.I. Fal'ko

925 On the resonant tunneling through double-barrier structures in a tilted magnetic field

A. K. Gupta, S. Chaudhry, N. Khare and  
V. S. Tomar

931 Observation of RF SQUID behaviour in BSCCO thick film upto 96 K

V. Bayot, L. Piraux, J.-P. Michenaud and  
J.-P. Issi

935 Role of minority light holes in the Hall effect of pregraphitic carbons

F. Saldi, J. Ghanbaja, J. F. Marêché and  
D. Billaud

941 Compared temperature dependence of the electrical conductivity of unoriented and stretched polyacetylenes doped with heavy alkali metals

P. Hlinomaz, V. Šmíd, J. Křištofik and  
J. J. Mareš

947 A comparison of different types of signal processing in PICTS measurements

Jifan Hu, Ziwen Dong, Zhongyuan Liu,  
Yinglie Liu, Mingying Feng and Zhenxi Wang

953 Magnetic properties and Mössbauer study for rapid quenched  $(\text{Nd,Dy})_2\text{Fe}_{23}\text{B}_3$  metastable phases



Sung Ho Lee and Seung Han Choi

957 Mössbauer studies on  $(\text{Fe}_2\text{O}_3) - 0.8(\text{Al}_{1-x}\text{Ga}_x\text{O}_3) - 0.2(\text{SiO})$  system**Superconductors and Superconductivity**A. F. Barabanov, R. O. Kuzian and  
L. A. Maksimov963 Pairing of hole excitations in adjacent  $\text{CuO}_2$  sheetsJ. Marcus, C. Escribe-Filippini, S. K. Agarwal,  
C. Chaillout, J. Durr, T. Fournier and  
J. L. Tholence967 Electrochemical synthesis and characterization of superconducting  $\text{Ba}_{1-x}\text{K}_x\text{BiO}_3$  single crystalsE. V. Sampathkumaran, I. Das,  
R. Vijayaraghavan, K. Hirota and M. Ishikawa

971 Observation of heavy-fermion like behaviour and anomalous magnetism in a Pr-based metal

G. Ruani, C. Taliani, R. Zamboni,  
V. M. Burlakov and V. N. Denisov979 Evidence for electron-phonon coupling in vibrational spectrum of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$  single crystalI. P. Kazakov, V. I. Kitorov and  
V. A. Stepanov983 Fast growth (FG) method for  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  single crystalsH. Kitagawa, H. Sato, N. Kojima,  
T. Kikegawa and O. Shimomura989 Metallization and phase transitions of the three-dimensional halogen-bridged mixed-valence complex  $\text{Cs}_2\text{Au}_2\text{I}_6$  under high pressure**General Papers (contd)**V. T. Dolgoplov, G. V. Kravchenko and  
A. A. Shashkin

999 Magnetoresistance of 2-D systems with slow electron exchange between quantum levels

J. Redinger

1003 Calculated angle-resolved off-normal photoemission spectra for nitrogen deficient  $\text{VN}_x(1\ 0\ 0)$ 

K. F. Ilaiwi and M. Tomak

1007 Electron polarization in a quantum well with uniform electric field

JUNE

VOLUME 78, NUMBER 12

1991

**General Papers**

Z. C. Feng, S. Perkowitz and P. Becla

1011 Multiple phonon overtones in ZnTe

C. R. Leavens and G. C. Aers

1015 The time-modulated barrier approach to traversal times from the Bohm trajectory point of view

S. N. Rao, Y. P. Reddy and P. S. Rao

1025 Spectroscopic investigations on copper doped magnesium hydrogen maleate hexahydrate

J. Kosztin and A. Zawadowski

1029 Violation of the  $f$ -sum rule for Raman scattering in metals

L. E. Cox and W. P. Ellis

1033 Core-level and valence-band X-ray photoelectron diffraction in  $\text{UO}_2(1\ 0\ 0)$ J. Krempaský, L. Wang, M. Proctor,  
A. Pignolet and F. Lévy

1039 Optical properties of PZT and PMZT sputtered thin films

R. G. Jordan, X. Wang, A. M. Begley,  
S. L. Qiu and Y. Liu

1045 Correspondence between the Fe 3s photoemission line-shape and the Fe local moment in Fe-V alloys

M. G. Tyazhlov

1049 Inhomogeneous exciton linewidth in semimagnetic  $\text{Cd}_{1-x}\text{Mn}_x\text{S}$ 

A. A. Dremin and A. V. Malyavkin

1053 Second mode in CR absorption of GaAs-GaAlAs heterojunction in tilted magnetic field



**Superconductors and Superconductivity**

D. A. Kuptsov and B. Vujičić

1059 Parallel upper critical field of layered superconductors with several superconducting layers in the unit cell

S. E. Shafranjuk and J. Keller

1063 Model of the electromagnetic field absorption in granular high  $T_c$  superconductors

---

**General Papers (contd)**V. G. Abramishvili, A. V. Komarov,  
S. M. Ryabchenko and Yu. G. Semenov1069 Magnetic-field affected luminescence of  $Mn^{2+}$  ions in  $Zn_{1-x}Mn_xSe$  compounds under resonance excitation of excitonsM. Venkateshwarlu, T. Bhaskar Rao and  
A. Hussain

1073 ESR study of vanadyl ion in triammonium citrate

D. Q. Hu, C. D. MacPherson and  
K. T. Leung1077 Thermal desorption study of thiophene on Si(1 1 1)  $7 \times 7$  for room temperature exposure

1081 Author Index Nos 1-12



